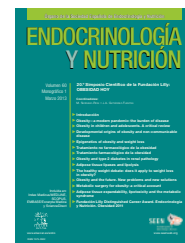


ENDOCRINOLOGÍA Y NUTRICIÓN

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20.º SIMPOSIO CIENTÍFICO OBESIDAD HOY

Obesity in children and adolescents. A critical review

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Obesity in children is currently a major public health issue. Obesity is defined as an excess of body fat. However, there are not adequate tools to directly assess body fat in children. For this reason, the body mass index (BMI) is widely used as screening and diagnosis tool. In order to adequately interpret BMI values, age and gender specific cut-off values should be used.¹ The prevalence of overweight and obesity has been increasing in the majority of the countries all over the world, at least until the end of the last century.² However, in the most recent years, a trend to a levelling-off or even decrease in its prevalence has been observed in several countries.³

The development of obesity in children may begin very early in life (Fig. 1). As in adults, genetic susceptibility is a basic determinant factor, with an important number of genes involved in their associated risk.⁴ Perinatal nutrition is another critical factor, as a low birth weight is also related with an excess of total and abdominal fat.⁵ Breast feeding has also been identified as a protective factor in the development of obesity. In addition, there are several observations about the interaction between genetic factors and early nutrition, in terms of their effect in the development of obesity.⁶

During childhood and adolescence, environmental factors are the main drivers of obesity development. They are mainly related with nutrition, and the lack of physical activity. The results concerning energy and macronutrient intakes are not conclusive.⁷ However, dietary patterns in children and adolescents seem to be associated with obesity development. Those factors cumulating more scientific evidence are a low meal frequency, skipping breakfast and a high consumption of sugar sweetened beverages.⁸ Maybe,

some dietary factors could cluster in the same children and this could increase the risk independently related with every factor. It has also been speculated that a particular gut microbiota profile could lead to the development of obesity early in life; however, human studies are not yet conclusive.⁹

Studies using objective measures of physical activity, support that a high level of physical activity, particularly vigorous physical activity, is associated with a lower total and central body fat in children and adolescents.¹⁰ However, physical activity and sedentary behaviours are different constructs and have particular correlates. There is evidence that excessive television watching promotes obesity in children and adolescents, but this does not occur for video games and computer use.¹¹

Obesity in children is relevant not only because obese children tend to become obese adults, but also because obese children already have a plethora of health complications.¹² The most frequent complications in children are the psycho-social ones; however, those with the highest impact in the long term are those related with the endocrine and cardiovascular systems. Currently, there is no consensus to define the metabolic syndrome in children, but a cluster of cardiovascular risk factors has been identified, even in prepubertal children, and they can be considered as presenting with the metabolic syndrome (Fig. 2).¹³

Recently, several authors¹⁴ emphasize that obesity control will require policy interventions to improve the environments that promote poor dietary intake and physical inactivity rather than individually focused interventions, and that the necessary policy changes are fraught with political challenges not associated with clinical interventions

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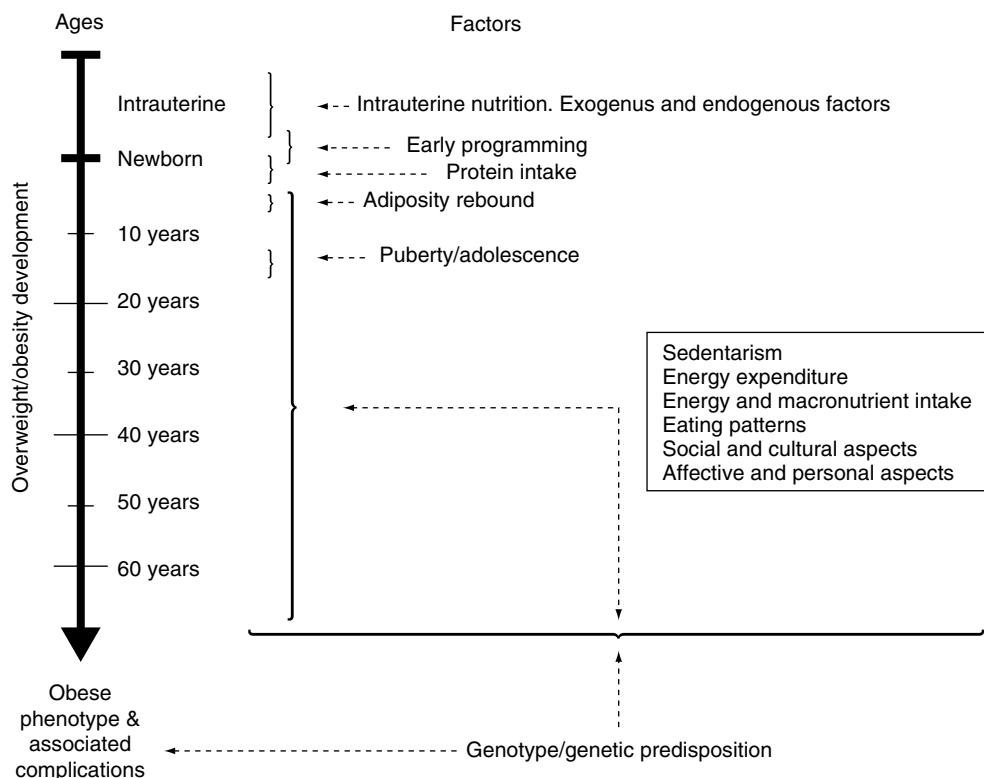


Figure 1 Factors influencing obesity development along different periods of life. Source: Rodríguez and Moreno. *Nutr Metab Cardiovasc Dis.* 2006;16:294-301.

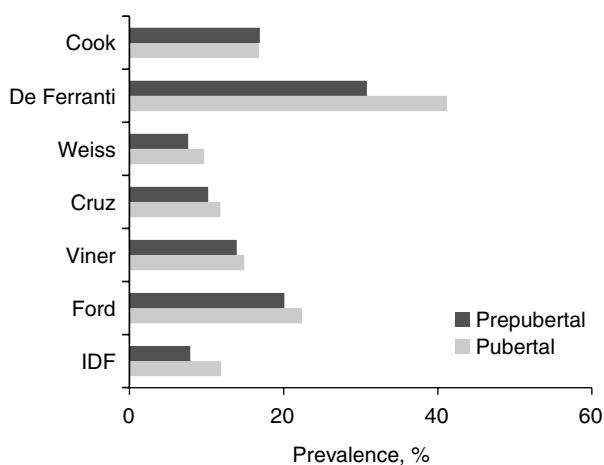


Figure 2 Prevalence of the metabolic syndrome in pubertal and prepubertal children. IDF, International Diabetes Foundation. $P=.029$.¹³ Source: Olza et al. *Ann Nutr Metab.* 2011;58:343-50.

that focus on individuals. The integration of actions within existing systems into both health and non-health sectors (trade, agriculture, transport, urban planning, and development) can greatly increase the influence and sustainability of policies.¹⁵

Obesity prevention requires effective interventions targeting the so-called energy balance-related behaviours (that is, physical activity, sedentary and dietary behaviours).¹⁶ To improve cost-effectiveness of these inter-

ventions, one needs to know the working mechanisms underlying behavioural change. Mediation analyses evaluates whether an intervention works via hypothesised working mechanisms. Identifying mediators can prompt intervention developers to strengthen effective intervention components and remove/adapt ineffective components. Despite its importance, few studies published results of mediation analysis. On the basis of the limited number of published studies, self-efficacy and intention appear to be relevant mediators for physical activity interventions.

The IDEFICS community-oriented intervention study mobilized an integrated set of interventional efforts at different levels of society, with the aim of facilitating the adoption of a healthy obesity-preventing lifestyle.¹⁷ Focus group research, literature review and expert consultations were done in an early phase as a basis for the development of the intervention modules. The intervention mapping protocol was followed as a guide for structuring the intervention research. The overall programme has been composed of 10 modules: three at community level, six at school level and one for parents. The main focus was on diet, physical activity and stress-coping capacity. The sphere of action encompassed children and their grandparents, schools, local public authorities and influential stakeholders in the community.

It is widely accepted that treating childhood overweight is an important contribution to the multilevel response to the obesity epidemic. Management protocols involving behaviour modifications, family support, and lifestyle changes are difficult to put into practice and may require the input of multi-disciplinary professional teams.¹⁸ Lifestyle

changes require a high degree of motivation and active participation of the children and their families. Weight loss programmes in children and adolescents have shown a full range of results. Overall, combined programmes tend to be more effective in children and adolescents. Drugs or surgical interventions in these ages have been considered as a possibility, but only in a limited number of patients. Successful methods to treat pediatric overweight and obesity remain a difficult task, but we should not forget that the aim of any program is not only weight reduction, but to change lifestyles and to reduce long-term risk factors associated with obesity.¹⁹

Given the high prevalence of obesity in all developed countries, we must not only develop effective treatment strategies but also have in mind that prevention of obesity, instead of treatment of the problem after it has developed, is an important issue for the future health of the child and adolescent populations.

Conflicts of interest

The author declares that he has no conflicts of interest in this article.

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